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NEW AND LITTLE KNOWN TROPICAL *HELINA* DESVOIDY, ALLIED TO *ARICIELLA* MALLOCH (DIPTERA: MUSCIDAE)

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The group of species described and discussed herein is a rather composite one and forms a connecting link between those species of *Helina* Robineau-Desvoidy having hypopleural hairs below the metathoracic spiracle (*Spilaria* Malloch, nec Schnabl and Dziedzicki),[1] certain Australian species typified by *H. antarctica* (Bigot)[2] and *H. spilariformis* Malloch,[3] and the Neotropical genus *Ariciella* Malloch.[4]

A generic name is not proposed for this group because of its very close relationships with several other groups within the genus *Helina*. If a name were to be given to the group, others within the genus would be entitled to generic rank which, in my opinion, are not distinct enough to warrant this designation because of the existence of too many species exhibiting intergrading characters.

At this time I wish to express my gratitude to a number of persons and institutions who have greatly aided me in the preparation of this paper. To Dr. C. H. Curran of The American Museum of Natural History, I am indebted for many kind and helpful suggestions, and the privilege of working over the collection of *Helina* in his care. To the authorities of the United States National Museum, I owe thanks for the loan of a large collection of species of this and related genera and for the privilege of examining types in their keep. Drs. Wather Horn and Hans Sachtleben very kindly loaned me types of several of Stein's species in the possession of the Deutsches Entomologisches Institut and a large collection of *Helina* and related genera. To Mr. J. R. Malloch, I wish to express my gratitude for help and kindly suggestions.

Below is presented a table which is intended not so much to serve as a means of identification as to show the affinities of this group with closely related genera and groups within the genus *Helina*.

KEY TO GROUPS

1.—Prosternum with a number of distinct setulae on at least the lateral margins.....2.
Prosternum without distinct setulae or hairs .....4.

2.—With only one intra-alar bristle; the longitudinal ridge-like portion of the hypopleura in front of the metathoracic spiracle bare; metathoracic spiracle with a number of long setulae among the short hairs covering the opening....*Pictia* Malloch.[5]
With two intra-alar bristles; hypopleura in front of spiracle with hairs.....3.

3.—Hypopleura below the spiracle and the portion above the hind coxae with short hairs; notopleura with a number of setulae; spiracle with both hairs and setulae; postalar declivity with some hairs in the middle.....*Ariciella* Malloch.
Hypopleura with hairs only in front of the spiracle, other portions bare; notopleura without setulae; spiracle with only the usual hairs; postalar declivity bare..... .....(*marmorata* group) *Helina*, part.

4.—Hypopleura bare below the spiracle; notopleura, and sides of the scutellum bare..5.
Hypopleura hairy below the spiracle; notopleura with setulae; sides of the scutellum below the level of the marginal bristles usually with hairs.....6.

5.—Fourth vein slightly bent forward at the apex; juncture of second and third with some setulae on the ventral surface..... .....*Helinella* Malloch.[6]

[1] Malloch, 1921, Can. Ent., LIII, p. 106; 1921, Ann. Mag. Nat. Hist., (Ser. 9) VIII, p. 226; Schnabl and Dziedzicki, 1911, Abh. K. Leop.-Carol. Deut. Akad. Naturf., LCV, p. 109; Seguy, 1937, Genera Insectorum, fasc. 205, p. 292.

[2] Bigot, 1885, Ann. Soc. Ent. France, (Ser. 6) V, p. 295; Stein, 1907, Zeit. f. Hymen. and Dipt., VIII, p. 211.

[3] Malloch, 1922, Ann. Mag. Nat. Hist., (Ser. 9) X, p. 142; 1925, Proc. Linn. Soc. New South Wales, L, p. 43.

[4] Malloch, 1918, Proc. Biol. Soc. Wash., XXXI, p. 66; 1921, Ent. News, XXXII, p. 40.

[5] Malloch, 1926, Philippine Jour. Sci., XXXI, p. 502.

[6] Malloch, 1926, Philippine Jour. Sci., XXXI, p. 498.

Fourth vein not bent forward; juncture of second and third with or without setulae on ventral surface..... *Helina*, part.

6.—Margin of metathoracic spiracle with a partial or complete row of setulae in addition to the hairs.....7.

Margin of metathoracic spiracle with only hairs..... (*lucorum* group) *Helina*, part.[1]

7.—Ventral surface of the third wing vein beyond juncture with second vein with a few weak hairs, or if bare, then the stem vein on ventral surface before or below the humeral cross-vein has a few similar setulae, or if both of these veins are bare then the metasternum has a few hairs and the metathoracic spiracle is smaller than the supra-spiracular convexity..... (*marginata* group) *Helina*, part.

Ventral surface of all wing veins bare; metasternum bare; metathoracic spiracle about as large as the supra-spiracular convexity.... (*antarctica* group) *Helina*, part.

The species group discussed in this paper is called the *marginata* group and at present contains nine species of which seven species and one variety are described as new. Undoubtedly there are several other described species which belong here, but they have not been seen and the existing descriptions are not complete enough to warrant their inclusion from description only.

Key to the *Helina marginata* Group

(Males and Females)

1.—Hypopleura with some hairs in front of the spiracle..... *pleuraseta*, n. sp.

Hypopleura bare in front of the spiracle..2.

2.—Mid femora with a stout, median anterior bristle; margins of the upper calyptrae narrowly darkened; the apical third or less of the anteroventral surface of all femora in males with a partial row of short, stout, spike-like bristles..... *marginata*, n. sp.

Mid femora without a stout, median anterior bristle; margins of the upper calyptrae not darkened; males without apical anteroventral spike-like bristles.....3.

3.—Ventral surface of third wing vein with one or more fine hairs beyond its juncture with second.....6.

Ventral surface of third vein bare beyond juncture with second.....4.

4.—Stem vein with one or more short hairs on ventral surface before or on a level with the humeral cross-vein; metasternum bare..... *crepedoseta*, n. sp.

Stem vein bare on ventral surface; metasternum with several hairs or fine setulae...5.

5.—Coxae black; first abdominal sternite bare; mesonotum with two broad black stripes; fore tibiae with two anterodorsal bristles (South American)..*angustipennis* (Stein).

Coxae yellow; first abdominal sternite hairy; mesonotum with four narrow black vittae; fore tibiae with only one anterodorsal bristle (Formosa and Sumatra).... *coronata* (Stein).

6.—Fore coxae and palpi yellow...*crocea*, n. sp.

Fore coxae and palpi darkened.....7.

7.—When viewed in profile, the antennae over half as long as the length of fore tibiae; the parafrontals and parafacials at base of antennae distinctly wider than the greatest width of second antennal segment. *prolatifrons*, n. sp.

When viewed in profile, the antennae less than half as long as the fore tibiae; the parafacials and parafrontals at base of second antennal segment not wider than the greatest width of second antennal segment.....8.

8.—Fore and mid femora mostly black, yellow only at the extreme apex; antennae largely yellow..... *compressifrons*, n. sp.

Basal half of fore and less than basal fourth of mid femora black; antennae entirely darkened..... *compressifrons* var. *fulvapoda*, n. var.

Helina marginata, new species

Male.—Length, 10 mm. Parafacials, parafrontals, and cheeks black, with dense silvery pruinescence. Frontal vitta black, slightly wider at narrowest part than distance across posterior ocelli inclusive. Front at narrowest equal to about three times the distance across posterior ocelli inclusive. When viewed in profile, parafacials and parafrontals at base of antennae slightly wider than greatest width of second antennal segment. Parafacials at narrowest point slightly narrower than narrowest portion of third antennal segment. Cheeks as high as twice the narrowest width of third antennal segment, with a row of short, almost spine-like ventral bristles and a single, similar bristle on vibrissal angle below the vibrissae. Ocellar bristles strong, stoutly developed, about as long as the anterior parafrontals. Anterior parafrontal bristles stoutly developed with three to four weaker bristles behind which reach about one-third the distance to vertex. Vibrissae about one and one-half times as long as ocellars. Antennae with second, and base of third segments reddish brown, the apical three-fourths of the latter infuscated. Antennae reaching to a level slightly below the ventral margin of eyes. Arista long, distinctly swollen at base; the longest hairs over three times as long as greatest width of third antennal segment. Palpi yellow, without the usual long fine bristles, instead with shorter and stouter, sharply pointed setulae, the apical ones on ventral surface being the most well developed.

[1] *Spilaria* Malloch, nec Schnabl and Dziedzicki. See footnote 1.

Mesonotum bluish black in ground color, whitish pruinescent; distinctly quadrivittate. Humeri whitish pollinose. About ten irregular rows of presutural acrostical setulae and a moderately well-developed pair of prescutellar acrostical bristles. Dorsocentrals 2–3; intra-alars 2; notopleurals 2, with a few setulae at base of the anterior one. Pra absent, the first of supra-alar series being three times as long as the second, and stoutly developed. Postalar declivity bare. Scutellum with a strong basal and apical pair and a weaker prebasal and preapical pair of bristles, setulae descending well on to the sides and a few invading the ventral surface. Propleura, pteropleura, and the hypopleura in front of the spiracle bare. Hypopleura with numerous hairs below spiracle. Sternopleurals 1–2. Metathoracic spiracular setulae longest and strongest on the posterior margin, those on ventral very short and widely spaced or absent. Prosternum and metasternum bare.

Coxae orange with a dark, dorsal infuscated stripe, densely gray pruinescent; the setulae black. All femora and tibiae yellow; tarsi black. Fore femora with a complete row of dorsal, anterodorsal, and anteroventral bristles; a series of four to six short, thorn-like bristles on apical fourth of anteroventral and posteroventral surfaces, the former being the most distinct. Fore tibiae with a short but distinct median anterodorsal bristle, posteriorly bare. Mid femora with a median and preapical anterior thorn-like bristle, and a series of four to six similar bristles at apex of anteroventral and posteroventral surfaces; three to five well-developed ventral bristles on basal half. Mid tibiae with two stout, median posterior bristles. Hind femora with a complete row of anterodorsal bristles, the basal two-thirds of anteroventral surface with several rows of short, fine setulae which become shorter and spine-like on apical third; posteroventral surface with a widely spaced row of bristles becoming thorn-like on apical third. Hind tibiae with one median anterodorsal and two anteroventral bristles, the latter less well developed. Pulvilli and tarsal claws well developed.

Wings darkish hyaline. Costa not conspicuously bristled; stem vein bare; third between juncture of second and third and anterior cross-vein with several short, fine hairs; the juncture bare on ventral surface. Third wing vein very slightly curved forward a short distance before apex and the fourth slightly deflected downward. Cross-veins at most only very slightly infuscated. Upper calyptrae with a distinct, narrow dark margin. Disc of upper and the entire lower one hyaline. Halteres yellow, with a dark spot at base of knob.

Tergites concolorous with thorax and with dense whitish pruinescence. Viewed from the side, the abdomen appears checkered. First and second visible tergites with four or five well-developed discal and apical lateral bristles; third and fourth with a well-developed row of apicals and a less well-developed discal row on third and a more well-developed discal row on fourth. Basal abdominal sternites hairy; the second, third, and fourth with a pair of stout, well-developed, apical bristles. The rest of the hair on sternites very fine so that the apical bristles appear very conspicuous. Fifth abdominal sternite with a moderate cleft, and without well-developed bristles. Hypopygium lighter colored, somewhat yellowish.

FEMALE.—Similar to the male in size, color, and bristling characters.

Front at widest part less than one-third of head width, widened anteriorly. Outer vertical bristles well developed, as strong as ocellars. Parafrontal bristles extending from the anterior ocellus to base of antennae, the basal two pairs and the apical pair more stoutly developed than others. Sides of parafrontals with two irregular rows of setulae.

Legs as in male except that the thorn-like bristles at apices of all femora on anteroventral and posteroventral surfaces are absent.

The ovipositor, of which only the suranal and subanal plates are visible, is yellowish.

TYPES.—Holotype, male, La Providencia, Obispo, Guatemala (C. M. Rouillard), in U. S. N. M. Allotype, female, topotypical, in U. S. N. M. Paratypes: four males and two females, topotypical; one male, Cordova, Mexico, February 8, 1908 (Fred'k Knab). One male and one female, topotypical, in Amer. Mus. Nat. Hist.; rest of paratypes in U. S. N. M.

This species in the male is very distinct, having the aforementioned thorn-like bristles on the fore femora and the blackish margin of upper calyptrae, these characters readily separating it from any other species of *Helina* known to me. The anterior mid femoral bristle readily distinguishes it in the female from any species in the *marginata* group and the majority of those in *Helina*. Otherwise it is very closely related to and similar in general habitus to the following species.

Helina crepedoseta, new species

MALE.—Length, 9 mm. Parafrontals, parafacials, and cheeks black, golden yellow pruinescent. Frontal vitta orange brown at base of antennae; front at narrowest as wide as the distance across posterior ocelli inclusive; parafrontals contiguous on the basal half. Parafrontals and parafacials at base of antennae about as wide as narrowest width of third antennal segment; the latter becoming somewhat narrower below; cheeks about as high as one and one-half times the greatest width of third antennal segment. Anterior pair of ocellar

bristles slightly smaller than the apical pair of parafrontals; parafrontals with a row of five or six moderately strong bristles on apical half, the anterior pair very much longer and stronger than the other subequal ones, about as long and strong as the well-developed vibrissae. Cheeks with three or four strong ventral bristles and with numerous stout hairs over the rest of the ventral margin. Antennae orange yellow, the second segment somewhat more brownish; antennae reaching to lower margin of eyes. Longest aristal hairs three times as long as greatest width of third antennal segment. Palpi black, with well-developed black setulae. Eyes long and densely haired.

Mesonotum black, yellowish gray pruinescent; when viewed from behind, with two distinct black dorsocentral vittae which reach almost to the base of the scutellum, and with two narrower lateral black vittae; a black elongated spot reaching from the prescutellar acrostical bristles to about the middle of disc of scutellum; presutural portion of mesonotum with two broad black vittae in addition to the dorsocentral pair. Mesopleura black; humeri and the rest of the pleural portions yellowish orange. Presutural acrostical setulae in about fourteen irregular rows, and two pairs of prescutellar acrostical bristles, of which the posterior pair is distinctly stronger. Dorsocentrals 2–3; intra-alars 2; both notopleural bristles with numerous, long, hair-like setulae at their bases; pra absent or very small; the clothing setulae on the thorax longer than usual. Postalar declivity bare. Scutellum with five or six irregular rows of long black setulae below the level of the marginal bristles and invading the ventral surface of the basal angles. Propleura and pteropleura bare; sternopleurals 1–2; hypopleura with numerous fine hairs below the ventral margin of spiracle and extending to the base of the posterior coxae. Metathoracic spiracle with black setulae among the hairs along the posterior and ventral margins; spiracular hairs brown. Prosternum and metasternum bare.

Coxae, femora, and fore tibiae yellowish; mid and hind tibiae brownish; all tarsi black; hairs on fore coxae yellow. Fore femora with the usual posterodorsal, posterior, and posteroventral rows of bristles; fore tibiae with four or five anterodorsal setulae which are slightly stronger than the adjoining clothing hairs but not as long as the diameter of tibiae; mid femora with three or four ventral bristles on basal half; mid tibiae with three strong posterior bristles on median half; hind femora with a complete row of anteroventral bristles, the apical ones much better developed than the others; hind tibiae with one anterodorsal and two anteroventral submedian bristles.

Wings brownish hyaline, the veins at base distinctly orange-colored; costa not conspicuously bristled; stem vein, before the humeral cross-vein, with one or two setulae on ventral surface; third bare. Third and fourth veins divergent at apices; cross-veins not infuscated. Calyptrae and halteres yellow, the former without darker margins.

The first and basal half of the second visible tergites yellowish in ground color, grayish pruinescent; remainder of the tergites black with lateral checkerings and an indistinct dorsocentral vitta. Ventral portion of the tergites and all of the sternites yellow, only the basal half of the last segment darkened; basal abdominal sternite bare; other sternites each with a pair of fairly long, black apical bristles; fifth abdominal sternite moderately cleft and with only very weak subapical bristles; first and second visible tergites with a single well-developed lateral apical bristle; third with a median and two lateral pairs of similar apical bristles; fourth with a row of well-developed discal and apical ones. Hypopygium yellowish brown.

FEMALE.—Similar to the male in size, color, and bristling characters; differing from it in having the front about one-fourth of head width, and in having two well-developed pairs of inner and outer vertical bristles, the former the better developed.

Fore tibiae with only very weak anteroventral bristles basad of the well-developed subapical one.

Visible portions of ovipositor yellowish.

TYPES.—Holotype, male, and allotype, female, La Providencia, Obispo, Guatemala (J. M. Aldrich), in U. S. N. M. Paratypes: one male, State of Colima, Mexico (L. Conradt), in U. S. N. M.; one male and six females, Higuito, San Mateo, Costa Rica, (Pablo Schild); one female, Tabernilla, Canal Zone, Panama, July 20, 1907, collected by August Busck. A male and female paratype from Higuito in Amer. Mus. Nat. Hist., the rest in U. S. N. M.

In well-preserved specimens the setulae on the stem vein at the ventral surface are very distinct, but in poorly preserved ones they may be rubbed off. The very long hairs on the eyes of the male, and the similar but shorter ones in the female, as well as the entirely light-colored antennae and the black palpi should at once distinguish this species from any others in the *marginata* group.

Helina compressifrons, new species

MALE.—Length, 7.5 to 8 mm. Parafrontals, parafacials, and cheeks black, silvery gray pruinescent. Parafrontals contiguous on apical half; front at narrowest part about as wide as distance across posterior ocelli inclusive. Parafrontals and parafacials at base of antennae about half as wide as the greatest width of second antennal segment; parafacials narrower below;

at narrowest point, about one-fourth as wide as width of third antennal segment. Cheeks about as high as greatest width of third antennal segment. Six to eight pairs of moderately well-developed parafrontal bristles on apical half, the apical pair about as well developed as the ocellar bristles and about half as long as the vibrissae. Cheeks with a row of equally long and strong ventral bristles except for the one at base of vibrissal angle which is almost as long and strong as the apical parafrontal pair. Second antennal segment black; the basal three-fourths of third brownish yellow, the apical fourth infuscated; reaching to a level opposite the lower margin of eye. Aristal hairs two and a half times as long as width of third antennal segment. Palpi black. Eyes sparsely haired.

Thorax black, grayish pruinescent, indistinctly quadrivittate. Acrostical setulae in about eight irregular rows; a pair of very weak prescutellar acrostical bristles. Dorsocentrals 2–3; intra-alars 2; anterior notopleural bristle with a few weak setulae at base; pra very short or absent. Scutellum with four or five rows of setulae below the level of marginal bristles. Postalar declivity with or without a few weak hairs in center. Propleura and pteropleura bare; sternopleurals 1–2; hypopleura with a few weak hairs below the spiracle. Metathoracic spiracle with setulae confined to the posterior margin. Prosternum and metasternum bare.

Coxae, basal three-fourths of fore and mid femora, and sometimes basal fourth of hind femora darkened; tibiae yellow; tarsi black. Hairs on fore coxae yellow to black. Fore tibiae with a very weak median anterodorsal bristle and no median posterior one. Mid femora with two or three ventral bristles on basal half; mid tibiae with three widely spaced posterior bristles. Hind femora with a complete row of anteroventral bristles which are slightly more well developed apically; hind tibiae with one median anterodorsal and two or three anteroventral bristles on median half, posterior surface with a few median setulae which are but slightly longer and stronger than the clothing setulae.

Wings yellowish hyaline. Costa not conspicuously bristled. Stem vein bare; third with a few setulae on ventral surface beyond juncture with second; third and fourth wing veins divergent apically. Cross-veins not infuscated. Calyptrae pale. Halteres yellow, slightly darkened before the knob.

Abdomen concolorous with thorax, with an indistinct dorsocentral vitta and lateral checkerings. Tergite bristling as in *crepedoseta*. Basal abdominal sternite hairy, other sternites with a moderately well-developed pair of apical bristles, except on fifth where they are much more weakly developed, cleft in this segment moderate.

FEMALE.—Similar to the male; differing from it in having the front slightly less than one-third the width of head, and the lateral scutellar setulae invading ventral surface.

All tibiae slightly darkened; hind femora with only the apical anteroventral bristles.

Fourth abdominal tergite with only the discal bristles well developed.

TYPES.—Holotype, male, and allotype, female, Barro Colorado Island, Canal Zone, January 11, 1929 (C. H. Curran), in Amer. Mus. Nat. Hist. Paratypes: topotypical, collected from December 24, 1928, to February 21, 1929; and four females, Trinidad River, Panama, March 20 to 29, 1912, collected by August Busck, in U. S. N. M.

Of the group of species described herein, this species and *pleuraseta* show the closest affinities to the genotype of *Ariciella* Malloch, namely, *Mydaea rubripalpis* Wulp. Both differ from the latter species in lacking the facial ridge setulae extending to a level opposite the middle of third antennal segment and in lacking the prosternal hairs. *A. rubripalpis* has hairs on the central portion of the postalar declivity, a character found in most specimens of *compressifrons*, and has hairs in front of the spiracle which are absent in the latter species. *Pleuraseta*, on the other hand, while not having hairs on the postalar declivity does have them in front of the metathoracic spiracle.

Of these several characters, it has been found that the presence of prosternal hairs is the most constant, while the prespiracular hypopleural hairs and those on the postalar declivity have a tendency to disappear when a long series of specimens of these or related species are examined. For this reason *Ariciella* may be retained as distinct from *Helina* only on the basis of prosternal hairs. However, if a long series of *A. rubripalpis* should exhibit a variation in prosternal hairs, it will be necessary to merge *Ariciella* with *Helina* on the basis of these two connectant forms.

Helina compressifrons fulvapoda, new variety

Similar in all structural characters and size to the typical *compressifrons*, but differing from it in the color of the legs. In this variety the legs are darkened only at the basal fourth and on a very limited portion of the anterodorsal surface of the fore femora. Mid femora darkened only on the basal one-eighth of the anterior surface. All tibiae and the entire hind femora yellow.

On the type specimen there are seven or eight

short ventral bristles on basal half of the left femora, the only middle leg present on the specimen.

HOLOTYPE.—Male, La Providencia, Obispo, Guatemala (C. M. Rouillard), in U. S. N. M.

It is possible that this is nothing more than an odd specimen of *compressifrons*. However, in the entire series of the typical *compressifrons* there are no intergrading specimens in regard to leg coloring. Hence, I give it a varietal name, until more specimens are available for study in order to find any structural characters which may be constant enough to warrant its specific separation.

Helina prolatifrons, new species

MALE.—Length, 7 mm. Very similar to *compressifrons* but differing from it in having only three or four pairs of parafrontal bristles; the parafrontals contiguous for only a very short distance at middle. Parafrontals and parafacials at base of antennae distinctly wider than greatest width of second antennal segment. Third antennal a little over half as long as the anterior tibiae. The antennae more extensively infuscated than in *compressifrons* and proportionately wider. Eyes more distinctly hairy.

Hind femora with anteroventral bristles, with the exception of the strong apical ones, confined to basal half.

Abdomen slightly more pointed.

FEMALE.—Similar to the male in size, color, and bristling characters, differing from it in having the front at the widest part about one-third of the head width; third antennal segment of similar length but less distinctly broadened. Only discal bristles on the last visible abdominal tergite, similar in this respect to the female of *compressifrons*.

TYPES.—Holotype, male, and allotype, female, Barro Colorado Island, Canal Zone, January 7, 1929, and January 8, 1929 (C. H. Curran), in Amer. Mus. Nat. Hist. Paratype, female, topotypical, March 14, 1929 (S. W. Frost), in U. S. N. M.

Helina crocea, new species

FEMALE.—Length, 7.5 mm. Parafrontals, parafacials, and cheeks black, grayish pruinescent. Front at widest part about one-third of head width. Frontal vitta black, slightly widened toward base of antennae; about two and a half to three times as wide as greatest width of one parafrontal. Parafrontals and parafacials at base of antennae not quite as wide as greatest width of second antennal segment. Parafacials distinctly narrowed below. Cheeks slightly higher than width of third antennal segment, with a complete row of well-developed ventral bristles. Parafrontals with two pairs of upper divergent orbital bristles, three parafrontals, the median pair very weak and the anterior pair very long and strong, as long and strong as vibrissae and slightly longer and stronger than the ocellars; inner vertical bristles as strong as ocellars and the outer verticals slightly longer than the orbital bristles. Antennae and palpi yellow. Antennae extending to a little below the lower margin of eyes. Arista long plumose, longest hairs two and a half times as long as width of third antennal segment. Eyes sparsely short-haired.

Thorax yellowish orange in ground color, grayish pruinescent, with four indistinct darker vittae. Acrostical setulae in seven or eight irregular rows; a pair of weak prescutellar acrostical bristles; dorsocentrals 2–3; intraalars 2; notopleurals 2, the posterior pair about two-thirds as long as the anterior, the latter with several setulae at base; pra about one-third as long as posterior notopleural bristle. Scutellum with three irregular rows of black setulae on sides below the level of marginal bristles; ventral surface bare. Postalar declivity bare. Propleura and pteropleura bare; sternopleurals 1–2; hypopleura with a few hairs below spiracle; metathoracic spiracle with the black setulae confined to posterior margin; spiracular hairs orange; prosternum and metasternum bare.

Legs, except tarsi, concolorous with thorax; coxal hairs black. Fore tibiae with a distinct median anterodorsal bristle and no posterior ones. Mid femora with two or three median ventral bristles. Mid tibiae with two long, and occasionally a third weaker, posterior bristles on median half. Hind femora with one or two strong apical anteroventral bristles. Hind tibiae with a submedian anterodorsal and two median anteroventral bristles.

Wings brownish yellow hyaline, at base the veins yellowish. Costa not conspicuously bristled. First vein bare; third with a few setulae beyond juncture with second on ventral surface; third and fourth veins slightly divergent at apex. Cross-veins not infuscated. Squamae and halteres very pale yellow.

Abdomen dark brown to black in ground color, grayish pruinescent, with an indistinct dorsocentral vitta and lateral checkerings. Basal abdominal sternite bare; second, third, and fourth sternites with a moderately well-developed pair of bristles. Tergal bristles as in the female of *compressifrons*. Ovipositor darkened.

TYPES.—Holotype, female, Campinas-Goyaz, Brazil (Borgmeier et S. Lopes), December 9, 1935, in Amer. Mus. Nat. Hist. Paratypes: female, topotypical, in author's collection; female, Tucuman, Argentina, January 4, 1930, Foothills San Javier (H. A. Jaynes), in U. S. N. M.

The Tucuman specimen has the thorax more darkened in ground color than have the other specimens, but so far as I can see there are no structural characters which will distinguish it specifically from the other two.

Crocea is very similar to *compressifrons*, differing from it in having fewer parafrontal bristles, the antennae and palpi entirely yellow and a stronger pra. The scutellar setulae do not invade the ventral surface as they do in *compressifrons*.

Helina pleuraseta, new species

MALE.—Length, 7 mm. Parafacials, parafrontals, and cheeks black, silvery gray pruinescent. Frontal vitta black, about as wide as diameter of anterior ocellus. Front at narrowest point as wide as distance across posterior ocelli. At widest point parafacials and parafrontals about as wide as width of third antennal segment, the parafacials becoming slightly narrowed below. Cheeks about as high as one and one-fourth the width of third antennal segment, with a complete row of strong bristles along the ventral margin. Five pairs of parafrontal bristles, extending from about the middle of front to base of antennae, the bristles becoming gradually longer and stronger anteriorly, the anterior pair about as long and strong as ocellar bristles and vibrissae. Antennae and palpi black, the third segment slightly more than three times as long as second, the antennae not reaching to lower level of eyes. Arista long plumose, longest hairs about three times as long as width of third antennal segment. Eyes with a few weak, widely scattered, hairs.

Thorax black, grayish pruinescent, indistinctly quadrivittate. Scutellum brownish yellow in ground color along the lateral margins and ventrally, the disc black. Acrostical setulae in about ten irregular rows, and a pair of moderately well-developed prescutellar acrostical bristles. Dorsocentrals 2–3; intra-alars 2; notopleurals 2, the anterior one with several setulae at base; pra absent. Postalar declivity bare. Sides of scutellum below level of marginal bristles with three or four irregular rows of decumbent black setulae which almost invade the ventral surface. Propleura and pteropleura bare; sternopleurals 1–2. Hypopleura with several long hairs on the ridge-like portion in front of the spiracle as well as below the spiracle on disc; spiracular setulae longest and most numerous along the posterior margin and becoming gradually shorter and more widely spaced along the ventral margin; the spiracle slightly smaller than the infra-alar bulla. Prosternum and metasternum bare.

Coxae and tarsi black, the rest of the legs yellow; coxal hairs pale. Fore femora with the usual bristles on the posterior surfaces. Fore tibiae with a short but distinct median anterodorsal bristle. Mid femora with four or five strong bristles on basal half of the ventral surface. Mid tibiae with two submedian posterior bristles. Hind femora with a complete row of anterodorsal and anteroventral bristles, those toward the base of the latter series somewhat shorter and less well developed. Hind tibiae with one anterodorsal and two anteroventral submedian bristles; there are indications of a few very weak median posterior bristles which are only discernible with difficulty from the clothing setulae.

Wings yellowish hyaline. Costa not conspicuously bristled. First vein and the stem vein bare; third distinctly hairy between the juncture of the second and third veins and the anterior cross-vein on ventral surface. Third and fourth wing veins widely divergent at apices. Posterior cross-vein slightly curved at middle. Cross-veins not infuscated. Upper calyptrae slightly darker than the lower, the margin of the former slightly darkened but not blackish. Halteres yellow.

Abdomen black in ground color, brownish gray pruinescent; when viewed from the side, with dorsal and lateral checkerings, and when viewed in certain lights the strong lateral bristles appear to be inserted in large dark spots. First and second visible tergites with a distinct lateral pair of subapical bristles, third and fourth with a complete row of apical and the fourth with a complete discal row of long, stoutly developed bristles. First sternite bare, the rest, including the fifth, with a stout pair of subapical bristles. Hypopygium distinctly orange-colored.

FEMALE.—Similar to the male; differing from it in having the front at widest part slightly less than one-third of the head width. A complete row of parafrontal bristles and numerous setulae at their sides.

Pra short but distinctly developed, about one-third as long as the posterior notopleural bristle. Scutellum somewhat ligher colored than in the male.

Hind femora with apical bristles much longer than the weak basal ones. Hind tibiae without a trace of the very weak, median posterior bristles.

Apical row of bristles on the last abdominal tergite much shorter and less well developed, the area at the base of these bristles and the visible portion of the ovipositor somewhat orange-colored.

TYPES.—Holotype, male, San Jose dos Campos (H. S. Lopes), July 9, 1933, in Amer. Mus. Nat. Hist. Allotype, female, topotypical, in Amer. Mus. Nat. Hist. Paratypes: male, Itaquaquecetuba, São Paulo, Brazil (C. H. T. Townsend); female, Nova Teutonia, Brazil, (27-11 'B,

52-23 'L[1]), October 10 (Fritz Plaumann), in U. S. N. M.; male and female, topotypical, returned to Senor Lopes; male and female, from Nova Teutonia, in author's collection.

This species differs from all the others within the group in having setulae in front of the metathoracic spiracle, which places it as a distinctly intermediate form between *Helina* and *Ariciella*.[2]

Helina angustipennis Stein

Mydaea angustipennis STEIN, 1911, Archiv f. Natur., LXXVII, Bd. 1, Heft 1, p. 79; 1919, Archiv f. Natur., LXXXIII, A, Heft 1, p. 116 (1917).

MALE.—Parafrontals, parafacials, and cheeks black, yellowish pruinescent; parafrontals contiguous on almost the entire length, each parafrontal about as wide as distance across posterior ocelli. Four pairs of parafrontal bristles on apical half which become stouter toward base of antennae, the apical pair much less well developed than the ocellars and vibrissae. Parafacials linear, less than one-fourth as wide as greatest width of second antennal segment. Cheeks very narrow, only slightly wider than greatest width of parafacials. Eyes bare, covering almost the entire head, the facets largest near margin of parafrontals and parafacials and becoming much smaller laterally. Antennae lemon yellow, not reaching to lower margin of eyes. Arista long plumose, the hairs about two and one-half times as long as width of third antennal segment. Palpi yellow, very slightly darkened basally; apical portion with numerous short spine-like setulae which are fairly distinct from the longer, more hair-like basal setulae. When viewed from behind, the head is very much wider than the greatest width of thorax, more so than usual in the genus *Helina*.

Thorax black, golden yellow pruinescent. When viewed from behind with two very broad, black, dorsocentral vittae. Notopleural bristles with a few setulae at base of each. Scutellum with a single row of short setulae lateral to the marginal bristle; ventral surface bare. Postalar declivity bare. Propleura and pteropleura bare. Hypopleura haired below margin of metathoracic spiracle. Spiracle with a complete row of setulae along the posterior and ventral margins. Prosternum bare. Metasternum with a few fine hairs.

Coxae brownish gray in ground color, whitish pruinescent. All femora and mid and hind tibiae yellow, hind tibiae darker, all tarsi black. Fore tibiae with two anterodorsal bristles, one at the middle and the other on apical fourth. Mid femora with four to five very weak ventral bristles on median half. Hind tibiae with one median anterodorsal and three or four closely placed median anteroventral bristles.

All wing veins bare.

Abdomen black, yellowish pruinescent. Abdomen quite slender, becoming gradually narrowed toward apex. First and second visible tergites with a single stout, lateral apical bristle, third with a median and two lateral pairs, and fourth with a complete row of discal and apical bristles. Basal abdominal sternite bare, third and fourth with a well-developed pair of apical bristles; fifth yellowish at apex, moderately cleft and with a somewhat weaker pair of apical bristles. Hypopygium yellow.

FEMALE.—Similar to the male; differing from it in having the front less than one-fourth the width of head. Inner and outer vertical bristles stoutly developed; the inner verticals, the ocellars, the anterior parafrontals, and the vibrissae of about equal size. Palpi more extensively darkened at base than in male.

Only the fore tibiae yellow, the rest of the legs, except the extreme apices of femora, dusky.

Ovipositor dark orange to brown, almost concolorous with the tergites.

Redescribed from one male and three females, Barro Colorado Island, Canal Zone, February, 14 to 18, 1929 (C. H. Curran) and one male, Rurrenabaque Beni, Bolivia (W. M. Mann, Mulford Biological Expedition, 1921–1922).

The first three specimens in the Amer. Mus. Nat. Hist.; the latter in U. S. N. M., determined by Dr. Aldrich.

I do not hesitate to determine this species as *Mydaea angustipennis* Stein because of the very distinctively shaped head and front in the male, and the very distinctively marked thorax and slender abdomen. This species was originally described from Bolivia and one of the males in the present material is also from there.

Helina coronata Stein

Mydaea coronata STEIN, 1915, Suppl. Ent., IV, p. 7; 1918, Ann. Mus. Hist. Natur. Hung., XVI, p. 181; 1919, Archiv f. Natur., LXXXIII, A, Heft 1, p. 118 (1917).

MALLOCH, 1926, Philippine Jour. Sci., XXXI, p. 496; 1928, Ent. Mitteil., XVII, p. 316.

This species, originally described from Formosa, belongs to the group of species discussed herein and shows certain chaetotaxic characters which ally it with *angustipennis* Stein. Together with this species it lacks the hairs beyond the juncture of the second and third wing veins on the ventral

[1] I am informed by Herr Plaumann that these figures refer to latitude and longitude where he collected the specimens.

[2] See also discussion under *compressifrons*.

surface, and possesses three or four metasternal hairs.

As typical of the group, it possesses: dorsocentrals 2–3, intra-alars 2, hairs on the notopleura, a few weak hairs below the metathoracic spiracle, two or three irregular rows of setulae below level of marginal scutellar bristles, and the metathoracic spiracle with a distinct series of black setulae among the hairs along the posterior margin. The propleura and pteropleura are entirely bare. Malloch mentions the lack of hairs in front of the metathoracic spiracle in two female paratypes which he states were loaned to him by the late Dr. C. F. Baker, but mentions that, "a series of both sexes from Sumatra which appear to belong to this or very closely allied species" have a few fine hairs in front of and below the spiracle. He does not mention the presence of metasternal hairs.

There are before me a male specimen from Chip-Chip Formosa from the H. Sauter collection and bearing the date "III '09" and a "cotypus" label, and two topotypical females each labeled "paratyp."; they were kindly loaned by the Deutsches Entomologisches Institut through the courtesy of Drs. Wather Horn and Hans Sachtleben. I treat these as authentic types.

The female agrees very well with Malloch's description. Additional descriptive characters not mentioned by either Stein or Malloch follow.

Beard yellow. Vibrissae, anterior pair of parafrontal bristles, ocellars, and inner vertical bristles equally well developed in female. In male the vibrissae are strongest, followed in strength by the parafrontals and ocellars, the inner verticals scarcely developed. Parafacials and parafrontals at base of antennae about as wide as greatest width of second antennal segment in female. The male specimen before me is slightly teneral and these characters cannot be evaluated.

Both sexes have the coxae with yellowish clothing setulae and strong black bristles. The postalar declivity is bare.

Basal abdominal sternite distinctly hairy in the three specimens before me. Abdominal bristling in both sexes as in *compressifrons*, except that the male has, in addition to these bristles, a strong median pair on the second tergite at apex.

"Spilogaster" plumata Stein

STEIN, 1904, Ann. Mus. Natur. Hung., II, p. 436.

Mydaea plumata STEIN, 1919, Archiv f. Natur., LXXXIII, A, Heft 1, p. 123 (1917).

There is a male of this species in the Deutsches Entomologisches Institut collection from Aregua, Paraguay, August 4, 1915, determined by Stein, before me at this time. It possesses all of the characters which would place it in the *Helina marginata* group, namely: setulae on third wing vein, hypopleural hairs, setulae along the margins of metathoracic spiracle, two intra-alar bristles, a few setulae at base of anterior notopleural bristle, hairs below the level of marginal scutellar bristles, and third and fourth wing veins divergent at apices.

It differs from all the others, however, in having three or four hairs on the pteropleura below the roots of the calyptrae. It is conceivable that these setulae might be absent in certain specimens so that I do not believe it to be generically distinct. Their presence, on the other hand, if constant, might warrant its generic separation. With only one specimen available at this time, I do not wish to commit myself as to its generic position. It will run to *crocea* in the key presented in the first part of this paper and may be distinguished from it in having the thorax, except the humeri, black in ground color, and the abdomen entirely yellow. The second and third visible tergites have an indistinct pair of brown spots at middle of each segment. The pra is entirely absent in *plumata*, although Stein in his original description states that the female has a short one. The hairs on the scutellum invade the ventral surface, a character which seems to be more pronounced in the females than in the males of this group, as illustrated by *compressifrons*.